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St. Clair & Erie SHIP CANAL

It will Save One-Twelfth
of the distance between

Port Arthur
AND
Port Colborne

map

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map in graph paper

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after 1895 -

after 1898 See p. 10

St. Clair and Erie Ship Canal

ITS LOCATION

FOR many years the possibility of a canal across the narrow neck of land between Lake St. Clair and Lake Erie has been discussed, but the situation is peculiar.

The great bulk of the traffic on the Great Lakes is carried in United States vessels, those belonging to Canadians being as yet much fewer in number. But the territory through which this canal would pass, is wholly Canadian, and while that government has spent many millions on its waterways for the encouragement of commerce, still it would hardly feel justified in appropriating money for the construction of this canal, whilst so much yet remains to be done in completing a fourteen foot way on the St. Lawrence. On the other hand the United States Government could not build a canal within Canadian Territory. So this project has awaited development and now the government has granted a charter to a private company and the canal is in a fair way to become a reality.

THE PHYSICAL FEATURES

The narrow neck of the peninsula between the lakes is only thirteen miles across, and for the first two miles from Lake St. Clair is low and marshy; thence it rises with a regular slope to the shore of Lake Erie, whose banks are about fifty feet above the water. Numerous borings have been made, far below the bottom of the proposed canal, which prove that no rock or other obstruction will be met with, so that the work will be simple excavation. It will be crossed by four railroads, and highway bridges. The fertile lands along its banks will be greatly benefited by the drainage it will afford.

IT IS A NECESSITY TO NAVIGATION

Formerly, crooked channels and sharp bends were but little trouble to the short and shallow draft vessels. But now that the bulk of the freight is carried in large steamers, many of them over 400 feet in length, and of as deep draft as the channels will allow, these sharp turns have made navigation difficult and dangerous.

Running under check, these long vessels lose their steerage way to a large extent, and it is often almost impossible to steer them safely round the bends, as is shown by the number that have been caught on the sharp rocky sides of the cut at the Limekiln Crossing.

To substitute a direct and straight course for the crooked route through the Detroit river, would be a great benefit to navigation, even if it were the same length. The proposed canal not only gives a perfectly straight course from the St. Clair Flats to Lake Erie, in place of the thirty-two changes of course in the Detroit river, but it is seventy-nine miles shorter, and is therefore an absolute necessity to the navigation of that part of the route through the Lakes.

WILL VESSELS USE THE CANAL ?

It would seem almost a matter of course, that vessels would choose the straight short route in preference to the longer and dangerous one.

Of the 32,000,000 tons which now passes through the Detroit river we may safely assume that two-thirds would choose the shorter route through the canal.

The average freight rate on the Lakes is very nearly nine-tenths of a mill per ton-mile. The saving of seventy-nine miles on 22,000,000 tons by passing through the canal would amount, on that basis, to \$1,564,200. If from this we deduct the tolls that would be charged on that amount of tonnage at $2\frac{1}{2}$ cents a ton, or \$550,000, there will remain a net saving of \$1,014,200, or about 20 per cent. on the estimated cost of the canal.

Under the sharp competition in rates, this saving would probably be divided between the shipper and the vessel, so that both producer and consumer would reap the benefit. No vessel could therefore afford to take the longer route if her competitors chose the shorter.

The canal will be excavated to a depth of twenty-one feet below low water level, and the deep water way of the same depth will soon be completed from Lake Superior to St. Clair Flats. But it will be many years before that depth can be uniformly maintained in the Detroit river, more especially at Bar Point, where, under the most favourable circumstances, there is but seventeen feet over the shoals; so that all deep draft vessels will be compelled to use the canal.

THE GAIN IN TIME

From the St. Clair Flats to an offing in Lake Erie opposite the mouth of the canal is 111 miles. From the St. Clair Flats through the canal is thirty two miles—nineteen in Lake St. Clair and thirteen in the canal. On account of shoals and bends, the fastest freighters cannot scarcely make ten miles an hour through the Detroit river, which would give a little over eleven hours for the 111 miles. The canal route would take five hours—two through Lake St. Clair and three through the canal. This would be a saving of six hours on

each trip, or half a day in the round trip. For vessels of slower speed the gain would be even more. If a steamer and consort average seven miles an hour, they would be sixteen hours traversing the 111 miles, while they would be but six hours on the shorter route, thus making a saving of twenty hours on each round trip. The average number of round trips from Port Arthur or Duluth to Port Colborne or Buffalo is in a season twenty-two, giving from nine to ten days to each trip. Half a day saved on each round trip by using the canal would be eleven days saved in a season, or more than sufficient for an extra trip.

Since just as many days would be occupied, and the same number of miles run in making the twenty-three trips, as in making the twenty-two by the longer route, the receipt for that extra trip would be almost clear profit.

WILL IT PAY ?

If the tolls are placed at $2\frac{1}{2}$ cents a ton, and 22,000,000 tons pass through—as a conservative estimate—then the gross receipts would be \$554,000. This would provide for the interest on the bonds, the cost of operation and maintenance of the canal, and leave a good margin.

Just as in the past, the amount of traffic through the Detroit

river has rapidly increased, so in the future will the passages through the canal increase and become greater year by year.

INSURANCE LOWERED

The short and direct passage through the canal will undoubtedly, by greatly lessening the risks, lower the insurance rates on all vessels taking that route. The losses every year in the passage of Detroit river are very great. Almost every season some of the large freighters strike on the rocky sides of the cut, left just as blasted, at the Limekiln Crossing, and are thereby often seriously injured, and obliged to be placed in dry dock. Sometimes they get stuck on these rocks and traffic is impeded for hours. Ballard's Reef, Bar Point shoals, and other places along the river have also a bad record.

During the months of September and October, 1895, thirty-six vessels grounded on the various shoals on this route, and were from a few hours to two days being lightered off, in some cases stopping the whole traffic of the river, as the channels were too narrow to permit of other vessels passing by.

Doubtless when the canal is complete, vessel owners will press these facts on the attention of the Insurance Companies, with a favourable result.

ELECTRICALLY LIGHTED

There will be no trouble in running the short route by night or day. At the entrance in Lake St. Clair a light will be established visible to vessels shortly after they leave the St. Clair Flats, and thence a line of lights along the sides of the channel which is on the direct course from the Flats, making it almost as light as day. At the other end there will be a lighthouse on the pier at the entrance, and thence through the lighted canal will be easy sailing.

HARBOUR OF REFUGE

In the neighbourhood of Point Pelee many accidents occur for want of a shelter in stormy weather. The Lake Erie entrance of the canal will be protected by piers which will widen out, so as to make a safe harbour for all vessels. This will be a great boon to navigators at that end of the lake.

COMPARED WITH THE HAY LAKE CHANNEL

In the St. Marys river the old channel was very crooked and very dangerous to run at night, although well lighted. The United States Government made a new cut through Hay lake at a cost of nearly two and a quarter millions. This channel is crooked but better than the old one, so that it can be run at night if care is taken.

It saves less than eleven miles, but the value to the shipping is so great that the government considers the large outlay well repaid. In 1894, the year after it was opened, all the traffic through the "Soo" locks took that passage, and it was estimated that at the rate given above, of nine-tenths of a mill per ton-mile, the saving to the nearly 14,000,000 tons of traffic which passed through, amounted to about seven per cent. of its cost. Now that the traffic passing through is 50 per cent. greater, the saving will amount to over ten per cent. of its cost; so that in a few years the new channel will fully pay for itself by the saving it makes in the cost of transportation.

If, then, navigators prefer the Hay lake channel with its many bends, and the necessity of running through by ranges during the day, and by range lights at night, because of the little distance saved, how much more willing will they be to take the St. Clair and Erie canal, with its perfectly straight course to Lake Erie and thus save a distance of seventy-nine miles.

IMPROVEMENTS INCREASE TRAFFIC

Every improvement in the navigation of the Great Lakes has been followed by an increase in the volume of commerce, and in the size of the vessels engaged therein.

In 1855, when the first "Soo" lock was opened to commerce, the tonnage passing through was only 106,295 tons, there being at that time a depth of only ten feet over the sill. In 1891 a new lock was opened, with sixteen feet over the sill, and the St. Mary's river shoals were deepened. During that year 2,000,000 tons passed through. In 1895 two new locks were constructed, with twenty-one feet over the sill, and in 1896 the traffic had increased to 16,806,781 tons, and in 1898 the tonnage passing the "Soo" amounted to 21,284,664 tons.

FREIGHT RATES REDUCED

The increase in the length and depth of vessels, made possible by the improvement of the channels, has tended to reduce the rates of transportation. To-day the big 400 foot freighters carry cargoes at one-tenth the amount received when the channels were only eight to ten feet in depth. The low rate of water transportation has also forced the railroads to lower their rates on all bulky articles correspondingly; and thus a commerce has been built up, which would have been impossible had there been no great water way. By that means only could the iron and copper mines of Lake Superior have been developed, and the grain of the North West have been brought into competition with that of the East. This water route, though

only covering part of the distance between the Western farmer and his market, has compelled the railroads to so reduce their rates for grain from the prairie region, that the price he obtains is almost equal to that realized by the grower in the Eastern States.

The smaller craft, being unable to compete with the low rates of the larger vessels, are abandoning the through traffic and content themselves with local trade. It has become a question of deepening and straightening the channels so as to accommodate the large vessel, and undoubtedly the straightest and deepest channel will draw the traffic.

THE SEASON OF NAVIGATION LENGTHENED

During the first and last trips of the season, vessels encounter much ice. In the open lakes they have but little trouble in getting through. In the St. Clair river and lake such ice as first forms is easily broken, but at the west end of Lake Erie the ice floes are driven by the prevailing winds into the mouth of the Detroit river, and among the islands, and piled up in ridges of considerable thickness which bar the passage of vessels. Towards the end of the season in 1898, a number of large freighters were thus caught by the ice, and more than a week was spent in releasing them, at much cost. Several of these boats were seriously damaged by the ice jams. This trouble occurs almost every year. Were the St. Clair

and Erie ship canal in operation this trouble and loss would be obviated. In the canal the ice would be broken as easily as in the St. Clair river; and the point of entrance to the canal on Lake Erie being well to the east of the islands and shoals, is quite clear of the accumulation of ice. The season could, therefore, by the use of this canal be extended some days later. For the same reasons the season would be opened some days earlier in Spring.

A CAR FERRY ROUTE

A singular fact, which in time will prove of great importance is, that across Lake Erie from east of Point Pelee and the islands to the south shore, there is an open belt of clear water all through the winter. Here a line of car ferries could run from Cleveland, Sandusky and Toledo to the canal with scarcely any danger of an ice jam. Coal could thus be transported direct to the canal without breaking bulk, the year round. This would be the transfer station for the coal used in Western Ontario. This fact is worthy the close attention of the shipping interest.

CHANGES IN WATER LEVEL

Lake Erie, being comparatively shallow, is more subject to fluctuation of its water level, due to the action of the wind, than any

other of the Great Lakes. These fluctuations are greatly magnified at the mouth of the Detroit river on account of its peculiar trumpet shape. Often during certain winds the water is so raised at the mouth, that the current of the river is reversed, and with winds from the opposite direction it is so lowered that vessels are often detained and obliged to wait a change of wind before they can cross the shoals. At Cleveland, however, these changes of level, due to the winds, are rarely as much as one foot. This city is on the south shore of the lake, directly opposite the canal entrance, so that the fluctuations due to wind, will at that point be about the same, and never sufficient to interfere with the navigation of deep draft vessels.

AS A WINTER HARBOUR

During the winter months, lake vessels have to lay up in some harbour, where they will not be disturbed by storms and running ice. Numbers of them moor to the piers at Detroit, and often after the river has been covered with ice, a thaw and storm coming together, the ice is broken up, and crashing along with the current, does serious injury to them. The canal will make an ideal refuge as its whole length will be protected from the storms and the closing of the guard gate will prevent injury from running ice. A ship

yard will be built close to the canal, where, in case of accident, repairs could be made with the least detention.

CONCLUSION

Trade is governed by universal laws. The shortest, easiest and cheapest route is always chosen. A difference of only a few miles in the length of a route, a slight obstruction which causes delay, will often make all the difference between profit and loss on a venture. The Hay lake channel is an instance. There, as soon as it was completed, for only a saving of eleven miles, passed all the commerce of the St. Mary's river.

How much more likely then are vessels to turn to the St. Clair and Erie canal, a straight, deep, and short passage, saving seventy-nine miles of difficult and tortuous navigation. This saving is one-twelfth of the distance between Port Arthur or Duluth, and Port Colborne or Buffalo. This will be a saving of one-twelfth of the time and one-twelfth of the cost of transportation between these points.

Did the volume of the traffic carried in Canadian bottoms justify the government in making this improvement, they would doubtless undertake the work. It is not, however, so much a question of the nationality of the transporting vessel, as that of adopting every possible means for reducing the cost of transportation. Now that a

private company proposes to undertake the work, and only asks the government to stamp it with the "Hall mark" of its approval, not asking for any subsidy or money outlay, it seems as if this boon would hardly be refused, in justice to the rapidly growing Canadian commerce, which will be benefited by the use of the St. Clair and Erie ship canal.